Quick Start Guide

Agilent Technologies
AC Source/ Power Analyzer
Graphical User Interface
for Windows 95-98, 2000 and Windows NT 4.0

Agilent Technologies

Contents

Description 3

System Requirements 3

Installing and Running the Software 4

Configuring the I/O 4

Performing Basic Operations 5

Printing and Saving Measurement Data 7

Exporting Measurement Data to Microsoft Excel 8

Sample Tests 8

- Inrush Current Measurement 9
- AC Line Dropout 10
- AC Line Surge or Sag 11
- Telephone Ring Generator 12
- AM or FM Modulation 13
- Transfer Time for UPS 13
- RTCA/DO-160 for Airborne Equipment 14

Creating User-Defined Output Waveforms 15

Using the Transient List Table 16

Advanced Controls 16

Warranty 19

Description

What the GUI Will Do

The Agilent AC Source Graphical User Interface (GUI) is an easy to use soft front panel for the Agilent Technologies 6800-series AC Power Source/Analyzers. With it, you can:

- Control output and measurement functions from a single screen.
- View an oscilloscope-like display of actual output waveforms.
- View the harmonic content of the output waveform.
- Easily generate complex output transients and user-defined waveforms by clicking and dragging the mouse.
- View the instrument commands generated by the graphical user interface.
- Operate in either simulation mode (no ac source hardware required), or in instrument control mode.

What the GUI Will Not Do

The Graphical User Interface does not:

- Automatically generate test programs
- Control instruments other than Agilent ac sources
- Provide drivers for other GPIB instruments
- Link with the Agilent HFTS software
- Operate with Windows 3.1
- Not recommended for use with RS-232 interface

System Requirements

PC and Memory

- Agilent AC Source GUI will run using the same miniumum PC and memory as required by the following operating systems.

32-bit Platforms

- Windows 95 - 98, 2000
- Windows NT 4.0

Supported I/O

- Agilent 82350A, 82340B, 82341C, 82341D, 82335B[1]
- National AT GPIB/TNT, AT GPIB/TNT PnP (Windows 95)

[1]The Agilent 82335B is only supported for Windows 95, provided you have either the E2094F or E2094E I/O library.

Supported Ac Source Models

- Agilent 6811A/B, 6812A/B, 6813A/B, 6814B, 6834B
- Agilent 6841A, 6842A, 6843A (in Normal mode only)

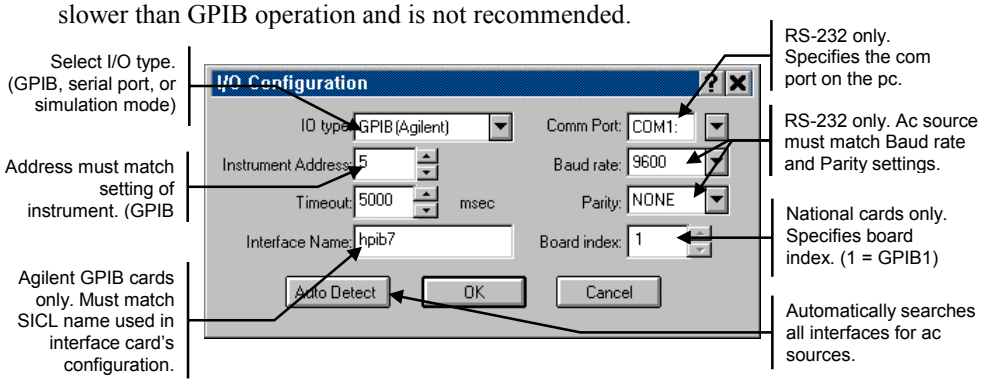
Installing and Running the Software

NOTE: Before running the Agilent AC Source GUI, you must have installed and connected your ac source to the pc using the appropriate interface cable. If you are using a National Instruments GPIB interface, you must have the appropriate card installed and configured on your pc. If you are using an Agilent GPIB interface card, you must also have the appropriate 32-bit SICL library drivers installed on your pc.

1. Place Disk #1 in the A: drive of your computer and run SETUP.EXE.
2. Follow the directions on the screen to install the software. The README.TXT file contains product updates or corrections that are not documented in the help file. Use any text editor to open and read this file.
3. To run the Agilent AC Source GUI, click on its desktop icon: You can also click on the Start button and select: **Programs | Agilent Technologies | AC Source GUI**.

Configuring the I/O

To configure the I/O, select the **I/O Configuration** command in the Edit menu. This step is necessary to establish communication with the ac source. The I/O configuration screen comes up automatically when you turn Simulation mode off in the Source menu. Note that operating the ac source over a serial port is much slower than GPIB operation and is not recommended.

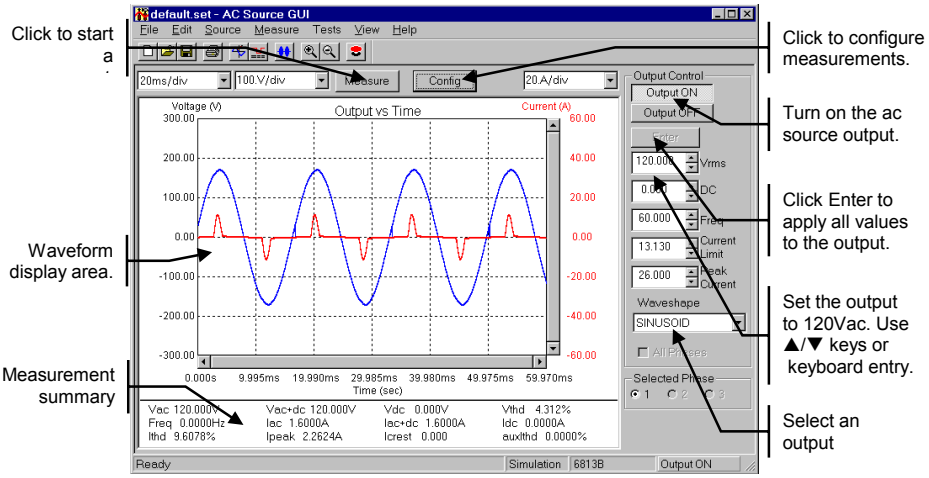

Select I/O type. (GPIB, serial port, or simulation mode)
Address must match setting of instrument. (GPIB
Agilent GPIB cards only. Must match SICL name used in interface card's configuration.
I/O Configuration
IO type: GPIB (Agilent)
Instrument Address: 5
Timeout: 5000 msec
Interface Name: hpib7
Comm Port: COM1:
Baud rate: 9600
Parity: NONE
Board index: 1
Auto Detect
OK
Cancel
RS-232 only. Specifies the com port on the pc.
RS-232 only. Ac source must match Baud rate and Parity settings.
National cards only. Specifies board index. (1 = GPIB1)
Automatically searches all interfaces for ac sources.

If there seems to be no communication between the Agilent AC Source GUI and the ac source, select **Auto Detect** to detect any ac sources connected to your pc. Also try resetting the I/O interface by clicking the red reset button. This also resets the ac source to its default settings.

NOTE: If you program the ac source from the front panel of the unit, you will need to refresh or update the Agilent AC Source GUI. Go to the **Source** menu and select the **Refresh Instrument State** command.

Performing Basic Operations

The **Main** window appears when you first run the Agilent AC Source GUI. From this window you can control the output of the ac source as well as view all output measurements.



To access an existing configuration,

- Click **File**, **Open Configuration** in the menu. Configuration files contain Agilent AC Source GUI settings but not actual ac source instrument settings.
- Select the desired file (files have an *.set extension) and click **Open**.
- To create a new configuration, click **File**, **New Configuration**. This action clears the present configuration, resets the ac source instrument to its default values, and sets the I/O to simulation mode.

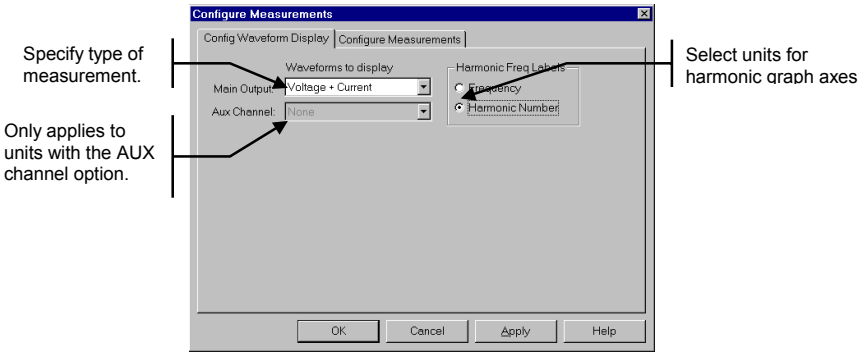
To program the output of the ac source,

- Under **Output Control**, program the output rms voltage, dc offset voltage, frequency, rms current limit, and peak current limit. You can either type in the values directly, or use the up/down arrows to adjust the present value. If you type in the values, you must press the **Enter** button.
- For 3-phase ac sources, select the **Phase** that you want to control. You can couple or control **All** phases simultaneously, or control each phase individually.
- Select a waveshape from the **Waveshape** list box - either Sinewave, Squarewave, or Clipped sinewave. For **clipped sinewaves**, you can specify the clipping level in percent of amplitude, or in percent of total harmonic distortion.

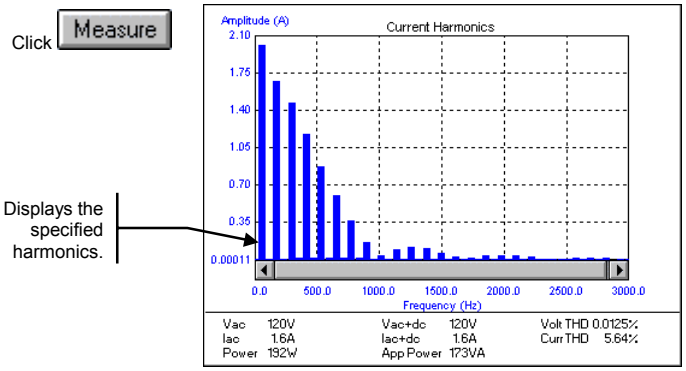
- Select **Output On** to enable the output of the unit. Select **Output Off** to turn the output off. Note that the selected waveshape will **not** appear on the Main window unless you click the **Measure** button.

To view output measurements,

- Select the **Config Measurements** command in the Measure menu. Select the Configure Waveform Display folder.



- To view voltage or current measurements, select **Voltage, Current,** or **Voltage + Current** in the Waveform to Display dropdown list.
- To view harmonic measurements, select a harmonic display functions.
- Click the **Measure** button to make an output measurement. The following figure shows a sample voltage harmonics measurement. Note that for 3-phase ac sources, you can only measure one phase at a time. Only the measurement of the selected phase is returned.



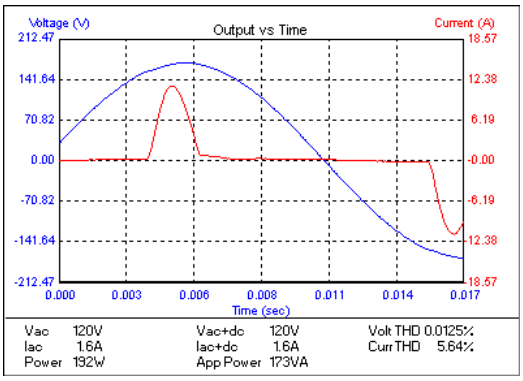
To save the configuration settings,

- Click **File**, **Save Config** in the menu.
- Enter a filename (setup files have an .set extension) and click **Save**. Note that Output Control settings are NOT saved in the setup file.

Printing and Saving Measurement Data

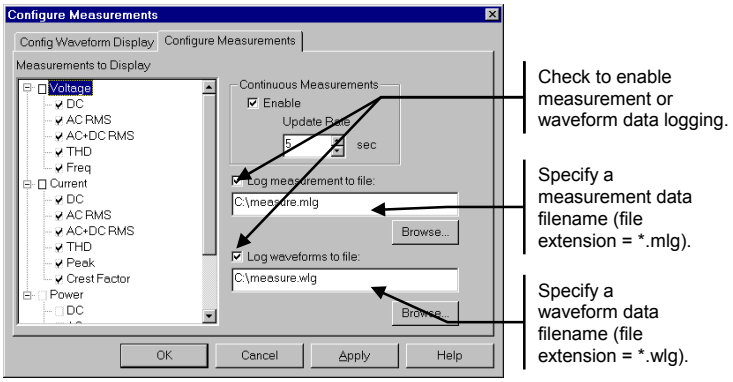
To print the measurement screen, click on either the Print icon or select the **Print** command in the File menu. You can preview and print the **Main** window only. The following is a sample preview/print of the Main window:

Click



To save the waveform that appears in the display, select **Save Waveform** in the File menu. This saves the displayed waveform as an ASCII file, which can be easily imported into other application programs.

To log measurement or waveform data to an ASCII text file, select the **Config Measurements** command in the Measure menu. Select the Configure Measurements folder. Check the appropriate **Log to file** box and provide a name for the data file. Data will be logged whenever an output measurement is made.



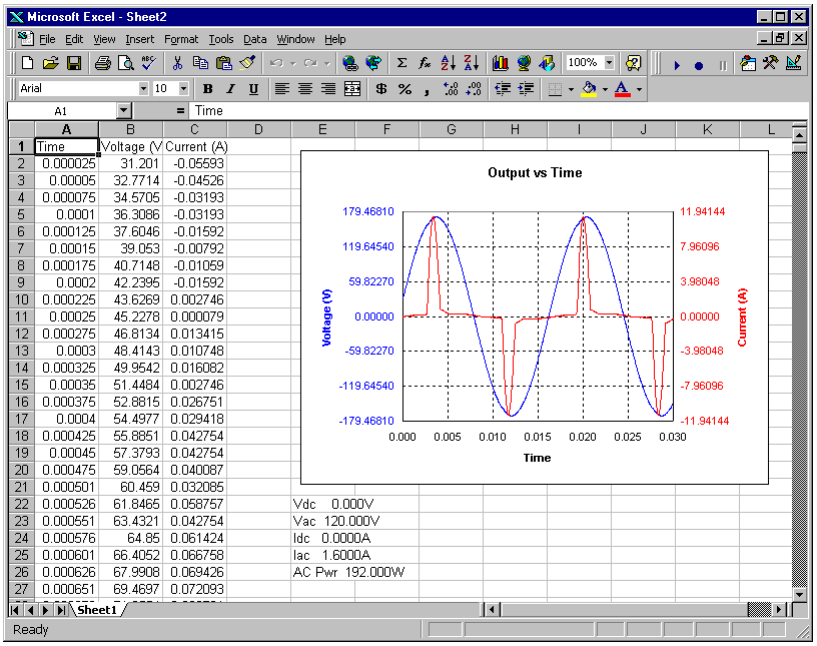
The measurement data file saves measurements in a comma-separated table of values. The columns in the list correspond to all available measurements, with blanks for non-measured values. For 3-phase units, only information from the selected phase will be saved.

The waveform data file saves measurements in a 3-column format. The columns are Time, Voltage and Current. Harmonics are not saved.

Exporting Measurement Data to Microsoft Excel

To export the measurement display and all measured data from the ac source directly to a Microsoft Excel spreadsheet, select the **Send Excel Chart** command in the Edit menu. The application only supports Microsoft Excel 97 and Microsoft Excel 2000.

The following is a sample Microsoft Excel spreadsheet with the exported data.

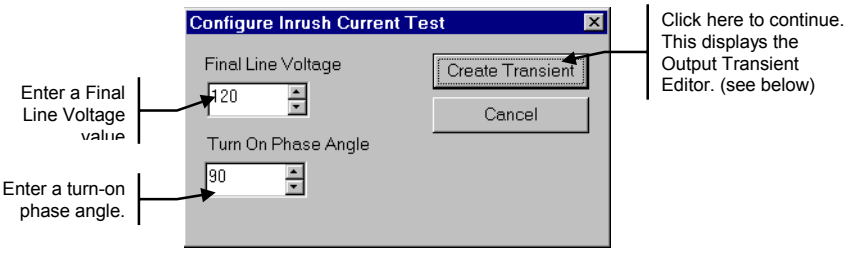


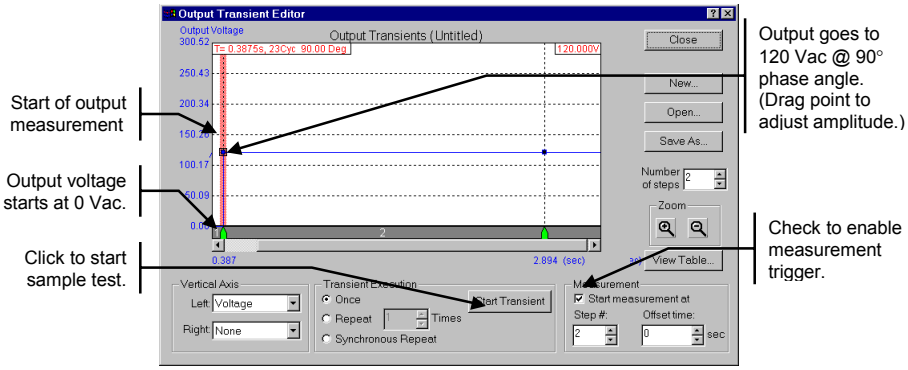
Sample Tests

The following sample tests are provided with the Agilent AC Source Graphical User Interface. These pre-defined tests help you quickly perform some common ac source applications.

Inrush Current Measurement

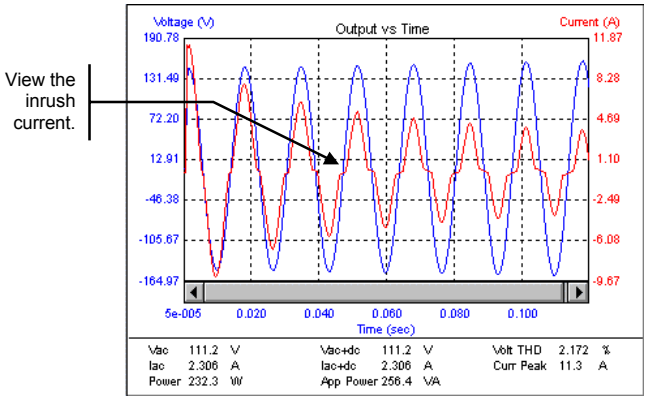
To perform an inrush current measurement, select **Inrush Current** in the Tests menu. The test uses the parameters that you enter in the following dialog box. This box is displayed on the screen when the test is first selected.





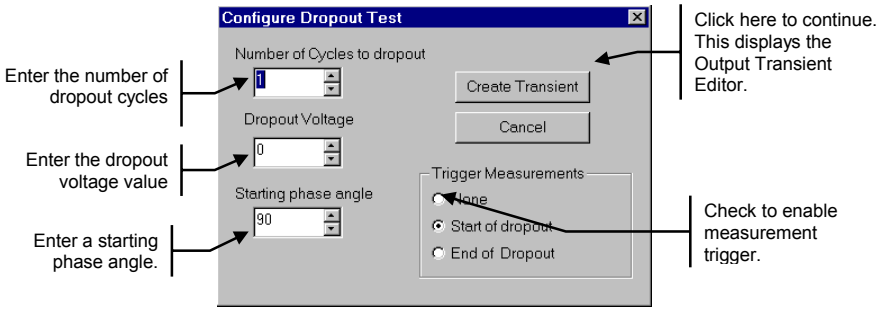
You can use the transient editor to make any final adjustments to the inrush current measurement such as fine tuning the width of the transient step, or positioning and enabling the measurement trigger.

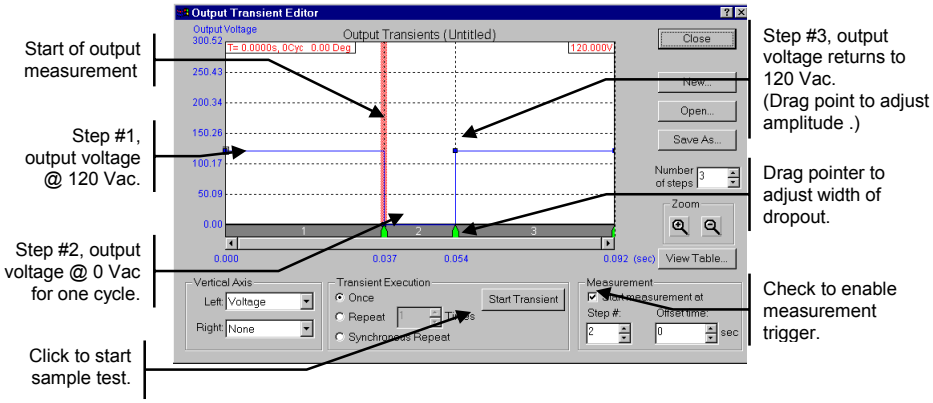
When measurements are enabled, you can view the inrush measurement in the Main window. If necessary, move the Transient editor out of the way to see the Main window. The following figure shows a sample inrush current measurement.



AC Line Dropout

To perform an ac line dropout, select **Dropout** in the Tests menu. The test uses the parameters that you enter in the following dialog box. This box is displayed on the screen when the test is first selected.



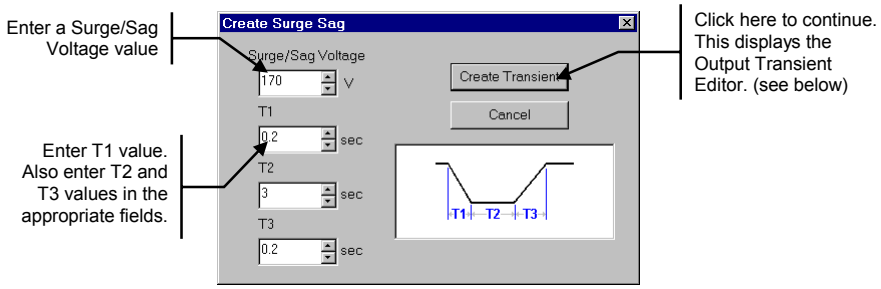


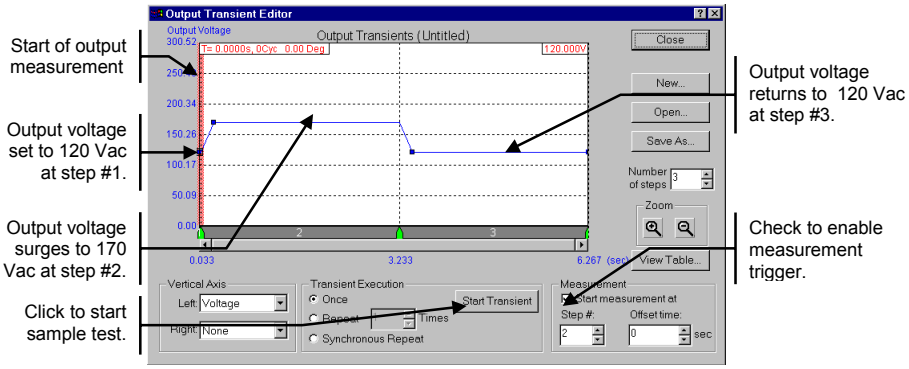
You can use the transient editor to make any final adjustments to the ac line dropout test such as fine tuning the width of the dropout, or positioning and enabling the measurement trigger.

When measurements are enabled, you can view the line dropout measurement in the Main window. If necessary, move the Transient editor out of the way to see the Main window.

AC Line Surge or Sag

To perform an ac line surge/sag, select **Surge/Sag** in the Tests menu. The test uses the parameters that you enter in the following dialog box. This box is displayed on the screen when the test is first selected.





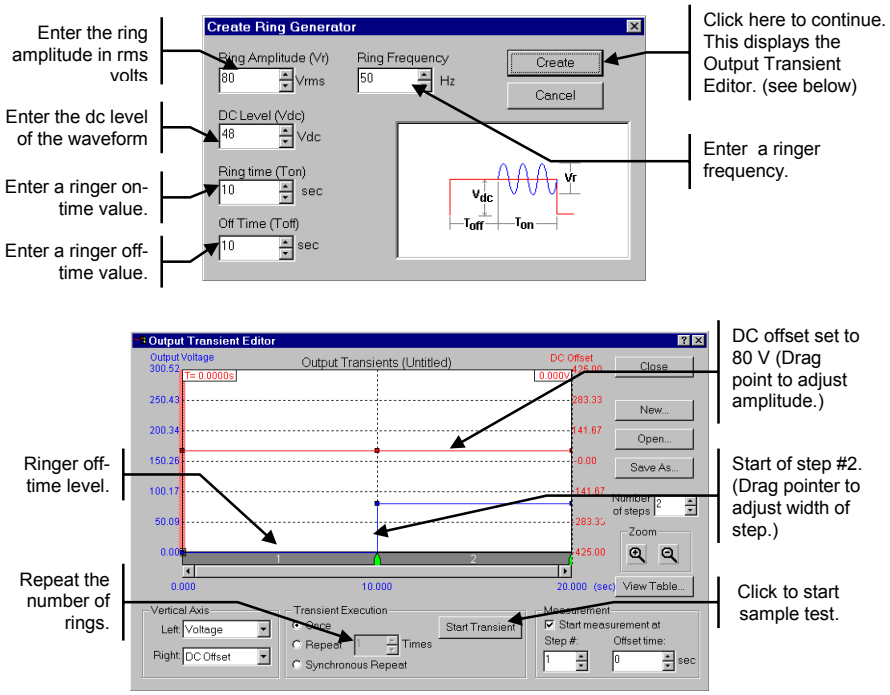
You can use the transient editor to make any final adjustments to the ac line surge/sag test such as fine tuning the slew rates of the surge or sag, or positioning and enabling the measurement trigger.

When measurement are enabled, you can view the line surge/sag measurement in the Main window. If necessary, move the Transient editor out of the way to see the Main window.

Telephone Ring Generator

CAUTION: This test is only designed to test telephone ringer circuits. Do not use this test to power any device that requires ac input power.

To produce an output signal to test telephone ringers, select **Ring Generator** in the Tests menu. The test uses the parameters that appear in the dialog box that is displayed on the screen when the test is first selected.



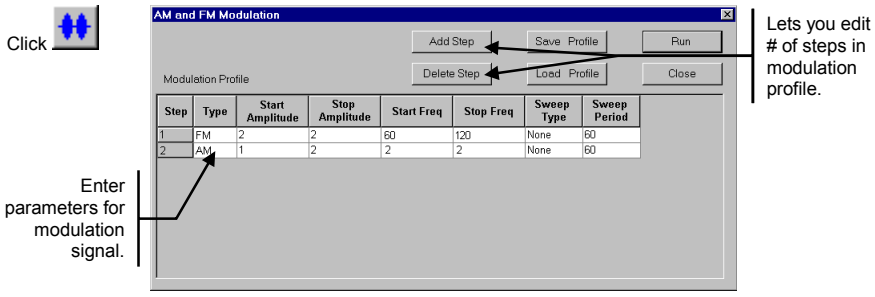
You can use the transient editor to make any final adjustments to the telephone ringer waveform such as fine tuning the dc level of the waveform. Note that the transient editor only displays the rms-portion of the telephone ringer; it does not display the actual waveform.

When measurements are enabled, you can view the ringer waveform in the Main window. If necessary, move the Transient editor out of the way to see the Main window.

AM or FM Modulation

To precisely generate AM or FM output signals, either click the Modulation icon, or select the **Modulation** command in the Tests menu.

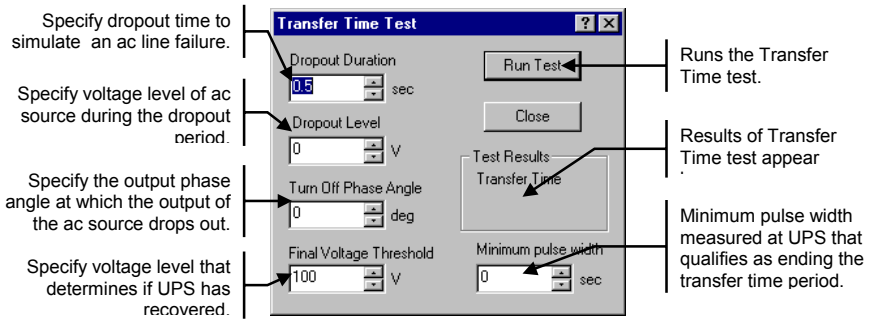
AM or FM output waveforms consist of a carrier signal (the fundamental) and a modulation signal. The voltage and frequency of the carrier signal is defined in the Output Control section of the Main window. Only the modulation signal is defined in this dialog box.



Modulation signals are comprised of from one to 20 individually programmed steps that may be combined into a modulation sequence and then run. Each step programs the modulation signal for the duration of the step. The amplitude and frequency of the modulation signal may be constant, swept linearly, or swept logarithmically from the starting value to a stop value. The sweep period is programmed in seconds.

Transfer Time for UPS

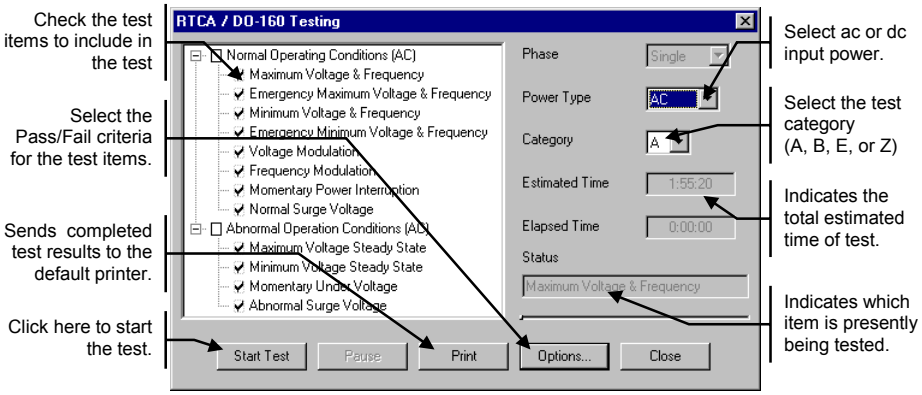
To measure the transfer time of switching devices such as UPSs, select **Transfer Time Test** in the Tests menu. Transfer time is defined as the time it takes a UPS for example to go from online-operation to battery backup operation when the ac line fails. The entire transfer time period must appear in the Main window for the measurement to be valid.



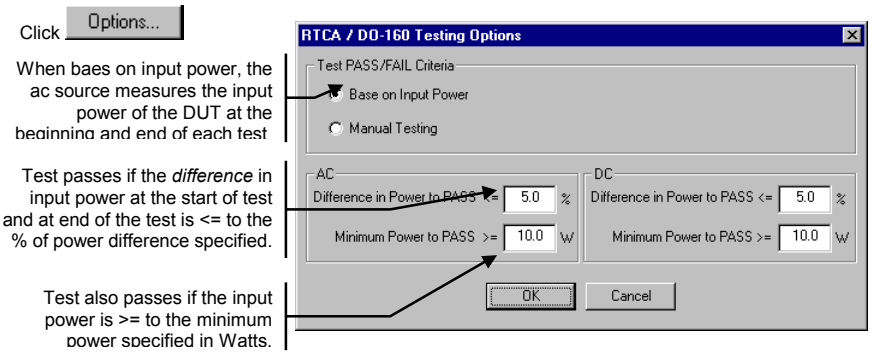
The transfer time results appear in the Test Results area of the dialog box. The transfer time is displayed in seconds. When you close the Transfer Time Test dialog box, you will be able to see both the output of the ac source and the output of the UPS in the waveform display area.

RTCA/DO-160 for Airborne Equipment

To test airborne equipment according to the RTCA/DO-160 specification, select **RTCA/DO-160** in the Tests menu. Only single-phase equipment is supported, three-phase equipment is not supported.



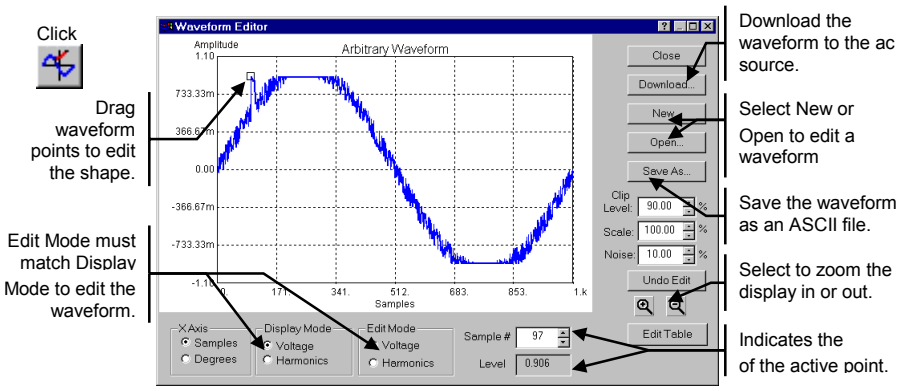
To configure the Test Pass/Fail criteria of the RTCA/DO-160 tests, click **Options**. You can specify either ac input or dc input tests. Note that both Pass/Fail criteria must be true for the ac or dc input tests to pass.



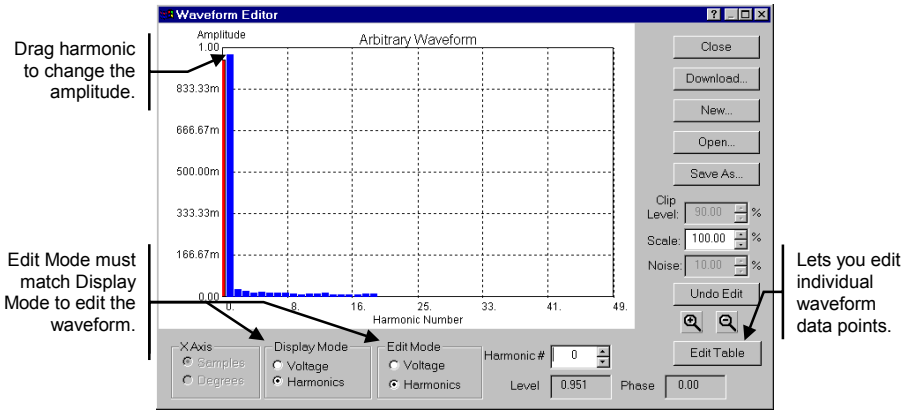
Creating User-Defined Output Waveforms

To create user-defined voltage waveforms, select either the waveform icon or the **Arbitrary Waveforms** command in the Source menu. This window lets you edit basic waveform shapes to create a user-defined arbitrary waveform.

Waveforms can be edited in either waveform or harmonic format. To create or edit a waveform, the Display Mode must match the Edit Mode. Download the completed waveform to the ac source. **To output the downloaded waveform, you must select it in the Waveshape box of the Main window.**



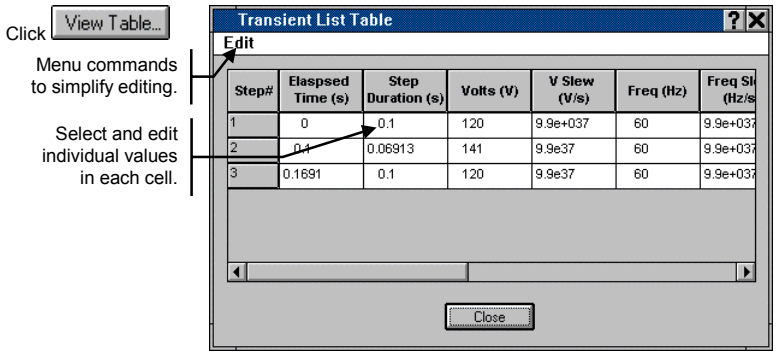
To create or edit waveforms in the harmonic format, set the Edit Mode and the Display Mode to **Harmonics**. Note that continually switching edit modes will result in cumulative waveform truncation errors. Therefore, select only one edit mode to work in. Switching display modes does not cause recalculation errors.



Using the Transient List Table

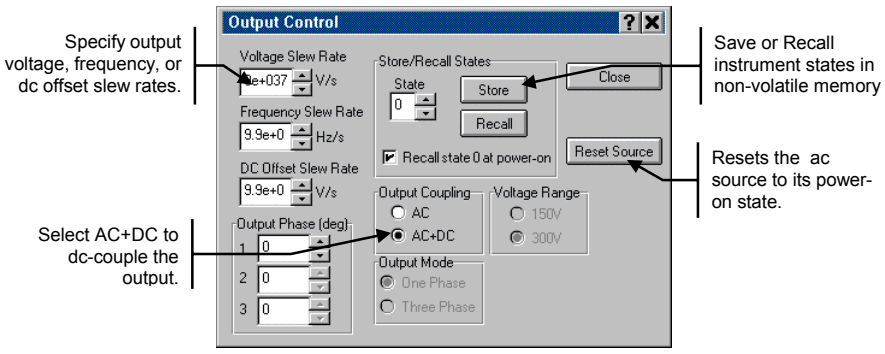
Four of the previous sample tests introduced you to using the click and drag editing features of the Transient Editor.

A more precise method of creating and editing transients is available by using the Transient List table. Click the **View Table** button in the Output Transient editor. The Transient List table is simply another view of the transient editor. The values in the table correspond exactly to the corresponding transient graph. The following table shows the values for the sample **Surge/Sag** test.

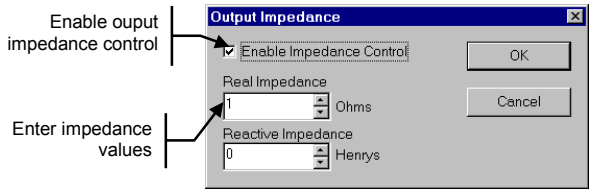

Click
View Table...
Menu commands to simplify editing.
Select and edit individual values in each cell.
Transient List Table
Edit
Step# | Elaspsed Time (s) | Step Duration (s) | Volts (V) | V Slew (V/s) | Freq (Hz) | Freq Sl (Hz/s
1 | 0 | 0.1 | 120 | 9.9e+037 | 60 | 9.9e+037
2 | 0.1 | 0.06913 | 141 | 9.9e37 | 60 | 9.9e+037
3 | 0.1691 | 0.1 | 120 | 9.9e37 | 60 | 9.9e+037
Close

Advanced Controls

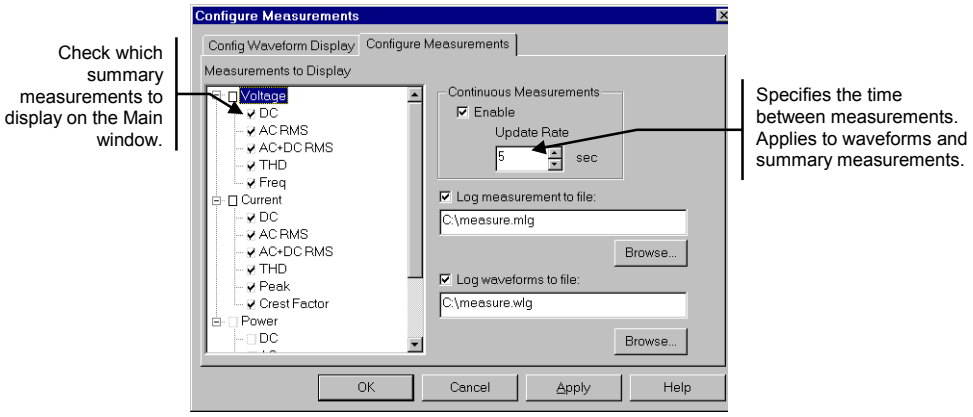
To access the less frequently used output controls, select the **Output Control** command in the Source menu. These output controls include slew rate settings, relative-phase on 3-phase units, output coupling, voltage range, and save/recall states.



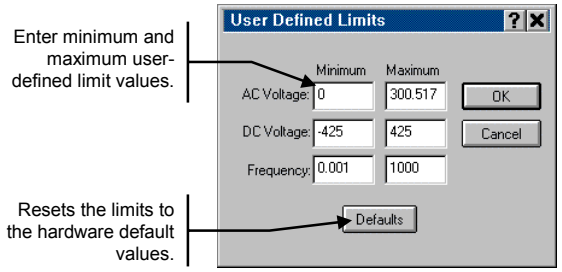
To program Output impedance, select the **Impedance** command in the Source menu. You can program real or reactive impedance. These controls are not available on all ac source models.



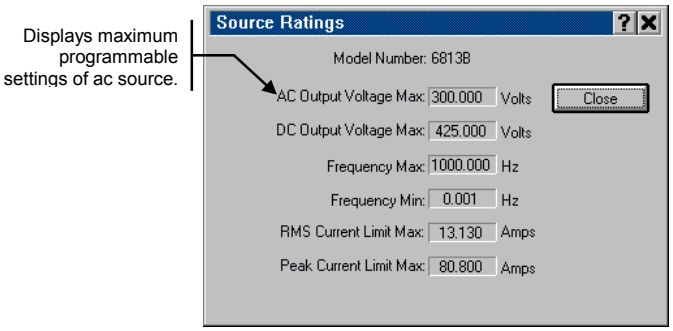
To configure output measurements, select the **Config Measurements** command in the Measure menu. Then select the Configure Measurements folder. You can select what measurements appear in the measurement summary area and how often the summary measurements are updated. You can also configure measurement and waveform logging, as previously discussed.



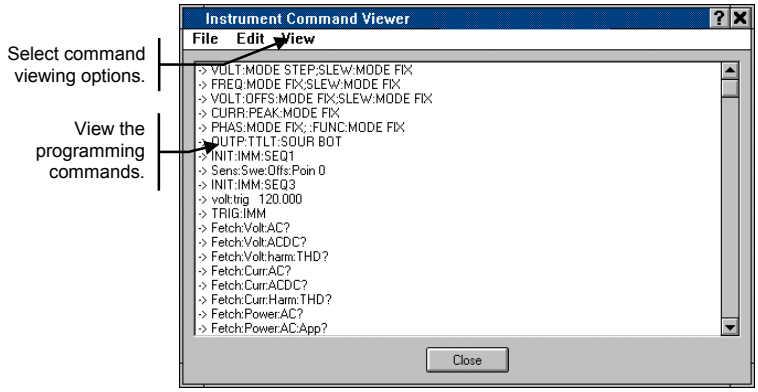
To program minimum and maximum user-defined limits for critical ac source parameters, select the **User Defined Limits** command in the Source menu. The controls in this dialog box can be used to prevent a user from accidentally programming dangerous voltage or frequency values in the Main window.



To display the maximum programmable values for the ac source that is presently being controlled by the Agilent AC Source GUI, select the **Ratings** command in the Source menu.


Displays maximum programmable settings of ac source.
Source Ratings
Model Number: 6813B
AC Output Voltage Max: 300.000 Volts
DC Output Voltage Max: 425.000 Volts
Frequency Max: 1000.000 Hz
Frequency Min: 0.001 Hz
RMS Current Limit Max: 13.130 Amps
Peak Current Limit Max: 80.800 Amps
Close

To view the SCPI instrument commands sent to the ac source, select **Instrument Commands** in the View menu.



Warranty

This Agilent Technologies software product is warranted against defects in materials and workmanship for a period of 90 days from date of delivery. During the warranty period, Agilent Technologies will, at its option either repair or replace parts which prove to be defective.

Agilent Technologies makes no express or implied warranty of any kind, including, but not limited to the implied warranties of merchantability or fitness for a particular purpose, with regard to the program material contained herein. Agilent Technologies shall not be liable for incidental or consequential damages in connection with or arising out of the furnishing, performance, or use of this software.

Use of the supplied manual and software is restricted to Agilent Technologies ac source products only. The software is copyrighted and may not be copied except for archival purposes, to replace a defective copy, or for program error verification. Agilent Technologies warrants that this software designed for use with a personal computer, will execute its programming instructions when properly installed on that personal computer. Agilent Technologies does not warrant that the operation of the personal computer , software, or ac source will be uninterrupted or error free.

Limitation of Warranty

The foregoing warranty shall not apply to defects resulting from: misuse, unauthorized modification, operation or storage outside the environmental specifications for the product, in-transit damage, improper maintenance, or defects resulting from use of non-Agilent Technologies software, accessories, media, or such items not designed for use with the product.

Notice

This document contains proprietary information protected by copyright. All rights are reserved. No part of this document may be photocopied, reproduced, or translated into another language without the prior consent of Agilent Technologies. The information contained in this document is subject to change without notice.

© Copyright 1997, 1999, 2000, 2001 Agilent Technologies, Inc.

Windows and Excel are registered trademark of Microsoft Corporation.

Agilent Technologies

Manual part number: 5962-8191

Printed in USA, February 1999
Updated June 2006